IN THE CLAIMS

1-2. (Canceled).

3. (Currently amended) The photon operating device according to claim ~~1~~ 4 wherein the other of said dual signals being led out from said selected first optical fiber externally of said two-dimensional plane and again introduced into said selected first optical fiber via a selected one of said plurality of second optical fibers or optical waveguides to join with said one of the dual signals.

4. (Currently amended) ~~The photon operating device according to claim 1~~ A photon operating device characterized in using dual signals correlated to each other, which are obtained by dividing a photon beam,

wherein paths of photons are provided by a plurality of first optical fibers and a plurality of second optical fibers or optical waveguides that are disposed in a form of a grating in a two-dimensional plane, the second optical fibers or optical waveguides contacting along and partially surrounding a length of an arc of an outer circumferences of the first optical fibers at an intersection thereof,

wherein a photon beam introduced into a selected one of said first optical fibers is divided at said intersection to create said dual signals correlated to each other, one of said dual signals being transmitted through within said selected first optical fiber, the other of said dual signals being led out from said selected first optical fiber externally of said two-dimensional plane at said intersection, and

wherein the one of said dual signals, which is an inversion signal of the other of said dual signals led out externally of said two-dimensional plane, is stored in storage means synchronously with leading out the other of said dual signals externally of said two-dimensional plane.

5. (Original) The photon operating device according to claim 4 wherein the other of said dual signals led out externally of said two-dimensional plane is an image signal.

6. (Original) The photon operating device according to claim 4 wherein said image signal is recognized and/or analyzed by acquiring difference in time and/or space of said inversion signal.

7. (Original) The photon operating device according to claim 4 wherein a result of recognition and/or analysis of said image signal is fed back to an image signal for the next display.

8. (Original) The photon operating device according to claim 4 wherein said inversion signal contains information about optical intensity, color or polarization.

9. (Original) The photon operating device according to claim 4 wherein said inversion signal is used for analysis of time and space for physical access to said two-dimensional plane from the exterior.

10. (Original) The photon operating device according to claim 9 wherein said physical access is an external pressure.

11. (Original) The photon operating device according to claim 9 wherein a position of said physical access on said two-dimensional plane is detected by using the other of said dual signals as a guide signal for a user and using said inversion signal as a signal carrying information for said physical access.

12. (Previously presented) The photon operating device according to claim 4 wherein a light source and a photo detector are disposed at one and the other ends of each of said first optical fibers.

13. (Original) The photon operating device according to claim 12 wherein said photo detector is connected to a shift register.

14. (Original) The photon operating device according to claim 12 wherein said light source is a semiconductor laser or a light emitting diode.

15. (Original) The photon operating device according to claim 12 wherein said photo detector is a charge coupled device.

16. (Currently amended) The photon operating device according to claim ~~1~~ 4 wherein an optical switch is used to lead out the other of said dual signals externally of said two-dimensional plane.

17. (Currently amended) A photon operating device using dual signals correlated to each other, which are obtained by dividing a photon beam, comprising:

a plurality of first optical fibers and a plurality of second optical fibers or optical waveguides that are disposed in a form of a grating in a two-dimensional plane, the second optical fibers or optical waveguides contacting along and partially surrounding a length of an arc of an outer circumferences of the first optical fibers at an intersection thereof; and

a light source of a plurality of light sources and a photo detector of a plurality of photo detectors disposed at one and the other ends of each of said first optical fibers,

a photon beam introduced from said light source into a selected one of said plurality of first optical fibers being divided at the intersection of said first optical fiber and said second optical fiber or optical waveguide by an optical switch using light-to-light interaction to create dual signals correlated to each other, one of which dual signals is a first signal transmitted through within said selected first optical fiber, and the other of which dual signals is a second signal led out from said selected first optical fiber externally of said two-dimensional plane,

said first signal led out from the other end of said selected first optical fiber being detected by one of said photo detectors,

wherein the one of said dual signals, which is an inversion signal of the other of said dual signals led out externally of said two-dimensional plane, is stored in storage means synchronously with leading out the other of said dual signals externally of said two-dimensional plane.

18. (Original) The photon operating device according to claim 17 wherein said light source is a semiconductor laser.

19. (Previously presented) The photon operating device according to claim 17 wherein said first optical fibers include those for red, those for green and those for blue, a light source for red emission being provided at one end of each of said first optical fibers for red, a light source for green emission being provided at one end of each of said first optical fibers for green, and a light source for blue emission being provided at one end of each of said first optical fibers for blue.

20. (Original) The photon operating device according to claim 19 wherein said light source for red emission, said light source for green emission and said light source for blue emission are semiconductor lasers.

21. (Previously presented) The photon operating device according to claim 17 wherein said first optical fibers and said second optical fibers or optical waveguides are disposed to form a curved plane.

Claims 22-36. (canceled).

37. (Currently amended) A photon operating method characterized in using dual signals correlated to each other, which are obtained by dividing a photon beam,

wherein paths of photons are provided by a plurality of first optical fibers and a plurality of second optical fibers or optical waveguides that are disposed in a form of a grating in a two-dimensional plane, the second optical fibers or optical waveguides contacting along and partially surrounding a length of an arc of an outer circumferences of the first optical fibers at an intersection thereof, and

wherein a photon beam introduced into a selected one of said first optical fibers is divided at said intersection to create said dual signals correlated to each other, one of said dual signals

being transmitted through within said selected first optical fiber, the other of said dual signals being led out from said selected first optical fiber externally of said two-dimensional plane at said intersection, and

wherein the one of said dual signals, which is an inversion signal of the other of said dual signals led out externally of said two-dimensional plane, is stored in storage means synchronously with leading out the other of said dual signals externally of said two-dimensional plane.